10.

$P_1\ P_2\ I_3\ P_4\quad I_5\ I_6\ I_7\ P_8\quad I_9\ I_{10}\ I_{11}\ I_{12}$

0001 1010 1010

$P_1 \oplus I_3 \oplus I_5 \oplus I_7 \oplus I_9 \oplus I_{11} = 0$

$P_2 \oplus I_3 \oplus I_6 \oplus I_7 \oplus I_{10} \oplus I_{11} = 0$

$P_4 \oplus I_5 \oplus I_6 \oplus I_7 \oplus I_{12} = 1$

0

8 4 2 1

0100 = greška u 4.

11.

1100 0011

$P_1\ P_2\ I_3\ P_4\ I_5\ I_6\ I_7\ P_8\ I_9\ I_{10}\ I_{11}\ I_{12}\ I_{13}\ I_{14}\ I_{15}$

1 0 1 0 1 0 0 1 0 0 1 1

0

12 Konstruirati grayev kod

000
001

011
010

110
111
101
100

100
101
111
110
010
011
001
000

Gibrizorni

	5	0	4	3	2	1
1	0	1	0	0	0	1
2	0	1	0	0	1	0
3	0	1	0	1	0	0
4	0	1	1	0	0	0
5	1	0	0	0	0	1
6	1	0	0	0	1	0
7	1	0	0	1	0	0
8	1	0	1	0	0	0

	5	0	4	3	2	1	0
0	0	1	0	0	0	0	1
1	0	1	0	0	0	1	0
2	0	1	0	0	1	0	0
3	0	1	0	1	0	0	0
4	0	1	1	0	0	0	0
5	1	0	0	0	0	0	1
6	1	0	0	0	0	1	0
7	1	0	0	0	1	0	0
8	1	0	0	1	0	0	0
9	1	0	1	0	0	0	0

185 → 0100 1011 1000

215 → 0101 0100 1000

$821_{(10)}$ $345_{(10)}$ 10-Komplement

$$\begin{array}{r} 999 \\ -\ 345 \\ \hline 654 \\ +\ \ \ 1 \\ \hline 655 \end{array} \qquad \begin{array}{r} 821 \\ +\ 655 \\ \hline \cancel{1}476 \end{array}$$

821 345

$$\begin{array}{r} 9999 \\ -\ 0345 \\ \hline 9654 \\ 9655 \end{array} \qquad \begin{array}{r} 1 \\ 0821 \\ +\ 9655 \\ \hline \cancel{1}0476 \end{array}$$

$$58 = \overset{32}{1}\ \overset{16}{1}\ \overset{8}{1}\overset{4}{0}\overset{2}{1}\overset{1}{0} = 72_{(8)}$$

$$\cancel{A}\cancel{A}3_{(\ldots)} = 3A_{(16)}$$

c)

$$\overset{8}{1}\overset{4}{1}\overset{2}{0}\overset{1}{1},\overset{-1}{1} = 1\cdot 2^3 + 1\cdot 2^2 + 0\cdot 2^2 + 1\cdot 2^1 + 1\cdot 2^{-1}$$

b)

$$\overset{8^3}{1}\overset{8^2}{7}\overset{8^1}{0}\overset{8^0}{1},\overset{8^{-1}}{0}\overset{8^{-2}}{2} = 1\cdot 8^3 + 7\cdot 8^2 + 0\cdot 8^1 + 1\cdot 8^0 + 0\cdot 8^{-1} + 2\cdot 8^{-2}$$

38 + 15   38 − 15

		1	1			
32	16	8	4	2	1	
1	0	0	1	1	0	
0	0	1	1	1	1	
1	1	0	1	0	1	

1 3 ~~2~~ 1

	−64	32	16	8	4	2	1
	0	1	0	0	1	1	0
+	1	1	1	0	0	0	1
1	0	0	1	0	1	1	1

0 0 0 1 1 1 1
1 1 1 0 0 0 0
1 1 1 0 0 0 1

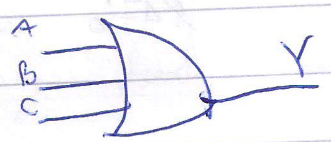
−14

16 8 4 2 1
0 0 0 0 0
0 1 1 1 0
+ 1 0 0 0 1
1
1 0 0 1 0

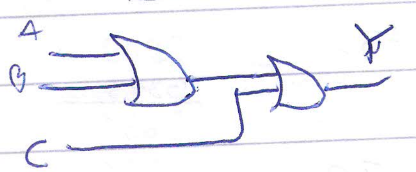
−16 8 4 2 1
1 0 0 1 0

Boolean algebra

$y = A + B + C$



$y = (A+B) + C$



$A \cdot (A+B) = A \cdot A + A \cdot B$

$= \cancel{A \cdot A} = A + A \cdot B$ izlučivanje

$= A(1+B) = A$

$A + B = \overline{\overline{A} \cdot \overline{B}}$ → lista

$\overline{A \cdot B} = \overline{\overline{\overline{A} + \overline{B}}} = \overline{A} + \overline{B}$

$A \cdot B = \overline{\overline{A} + \overline{B}}$!

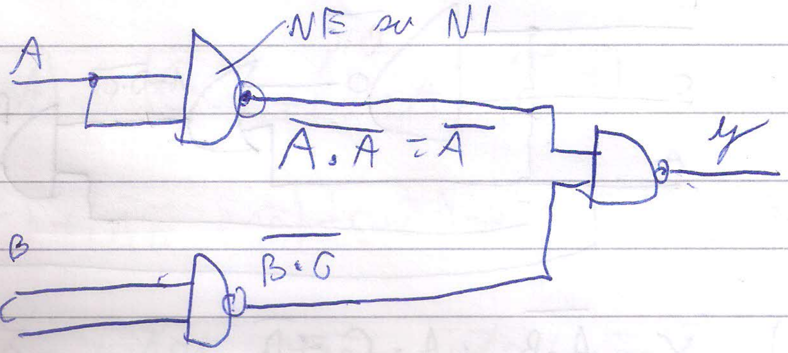
$\overline{A} \cdot B = \overline{\overline{\overline{A}} + \overline{B}}$

samo sa NI → 1. red na ispitu (obavezno) !!!

$y = A + B \cdot C$

↓

$\overline{\overline{A} \cdot \overline{B \cdot C}}$ →



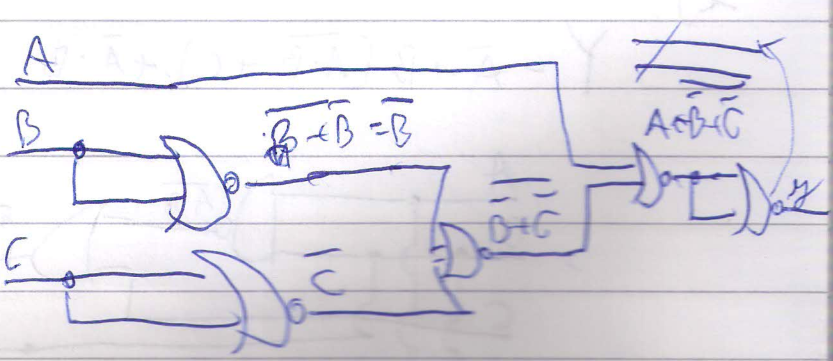
samo sa NILI

$y = A + B \cdot C$

↓

+

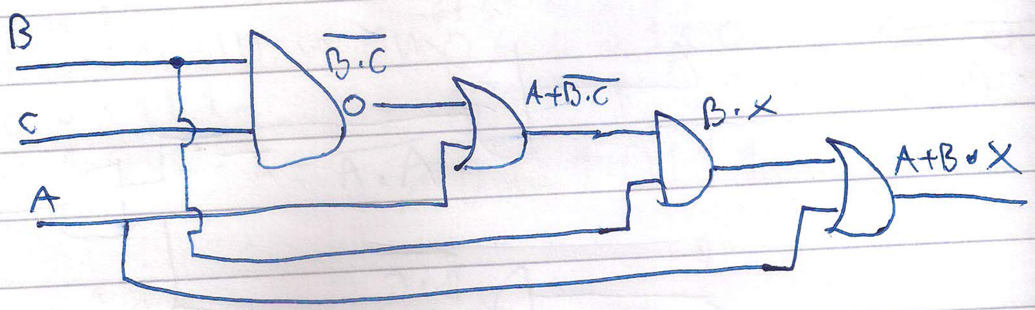
$\cancel{\overline{\overline{A} + \overline{B} + \overline{B}}}$ → $A + \overline{\overline{B} + \overline{C}}$



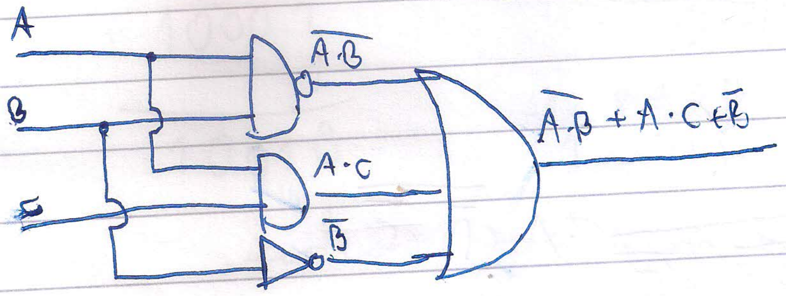
$\overline{A \cdot B} = \overline{\overline{\overline{A} + \overline{B}}} = \overline{A} + \overline{B}$ → tako postaje do [illegible] stanja

Vježba

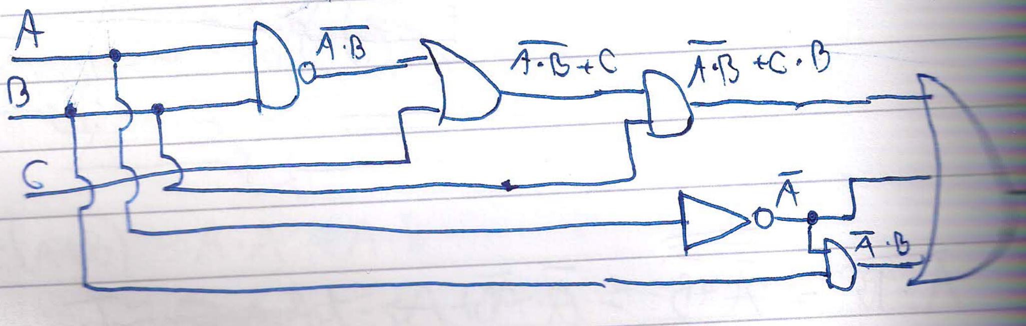
a) $Y = A + B\cdot(\underbrace{A + \overline{B\cdot C}}_{X})$



b) $Y = \overline{A\cdot B} + A\cdot C + \overline{B}$



c) $Y = \overline{A} + B\,(\overline{A\cdot B} + C) + \overline{A}\cdot B$



V testu se traži kanonski zapis (...

npr $f(A,B,C) = \sum(1,2,5,7)$

V testu će uglavnom nedostajati bit...

Uglavnom minterme na testu

$f_2(ABC) = \overline{ABC} = \bar A + \bar B + \bar C$

De morgan

$= \bar A(B+\bar B)\cdot(C+\bar C) + (\bar A + A)\cdot B\cdot(\bar C\cdot C) + (\bar A\cdot A)\cdot(\bar B\cdot B)\cdot \bar C$

$= (\bar A B + \bar A \bar B)\cdot(C\cdot\bar C) + (\bar A\bar B + A\bar B)\cdot(C+\bar C) + (\bar A + \bar A)\cdot(B\bar C + \bar B\bar C)$

$= \bar A \cancel{B} C + \bar A \cancel{B}\bar C + \cancel{\bar A B C} + \bar A\bar B\bar C + \bar A\bar B C + \cancel{\bar A\bar B\bar C} + A\bar B C +$
$A\bar B\bar C + AB\bar C + \cancel{A\bar B\bar C} + \cancel{\bar A\bar B\bar C} + \cancel{\bar A\bar B\bar C} = \bar A\bar B\bar C + \bar A B C + \bar A B\bar C +$
$\bar A\bar B C + A\bar B C + A\bar B\bar C + AB\bar C$

$f(A,B,C) = \Sigma(0,1,2,3,\cancel{7},5,6)$

ABC	y
000	1
	1
	1
	1
	1
	1
	1
111	0

$y = \overline{\overline{B\cdot C} + \bar A}\cdot \bar A$

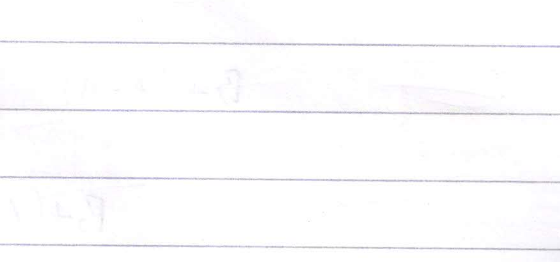
não correta

$= \overline{\overline{\overline{BC}}\cdot\bar{\bar A}}\cdot\bar A$

$= ABC\cdot\bar A = \emptyset$

$y = \overline{\overline{BC} + A}\cdot\bar A$

$= \bar A BC\cdot\bar A = \bar A BC$



$A\cdot(\bar{A}+A\cdot B)=A\cdot B$

$Y=\bar{A}\bar{B}\bar{C}+\bar{A}\bar{B}C+\bar{A}B\bar{C}+\bar{A}BC$

$\bar{A}\bar{B}\cdot(\bar{C}+C)+\cancel{B(\bar{A}\bar{C}+\bar{A}C)}\ \bar{A}B\cdot(\bar{C}+C)$

$\bar{A}\bar{B}+\bar{A}B$

$\bar{A}\cdot(\bar{B}+B)$

$\bar{A}$

$A+\bar{B}$ $\qquad$ $\overline{A+\bar{B}}$

$B+(A+\bar{B})$

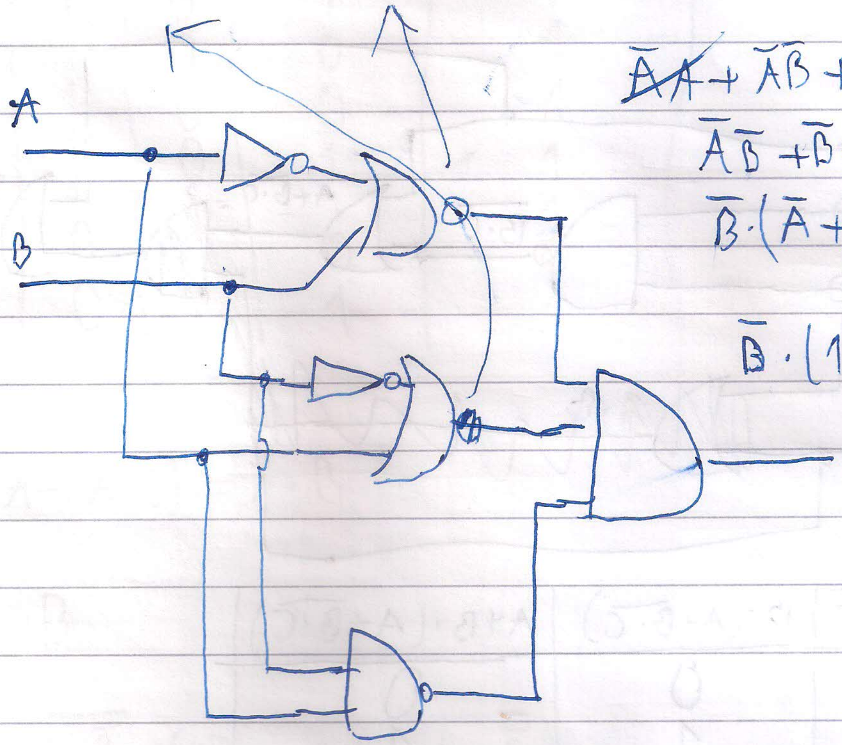
$B+(A+\bar{B})\cdot\overline{A+\bar{B}}$ $\qquad$ $(B+A+\bar{B})\cdot(\overline{A+\bar{B}})$

$A\cdot\overline{\overline{A}}\cdot\bar{B}$ $\qquad$ $+$

$A\cdot\bar{A}\cdot B$

$0\cdot B=0$

$\overline{A\cdot B}\cdot(A+\overline{B})\cdot(\overline{\overline{A}+B})$ $\quad$ $(\overline{A}+\overline{B})\cdot(A+\overline{B})\cdot(A\cdot\overline{B})$



$\cancel{\overline{A}A}+\overline{A}\overline{B}+\overline{B}\overline{B}+\overline{B}A\cdot(A\cdot\overline{B})$

$\overline{A}\overline{B}+\overline{B}+\overline{B}A$

$\overline{B}\cdot(\overline{A}+1+A)\cdot(A+\overline{B})$

$\overline{B}\cdot(1+A) = \overline{B}\cdot(A+\overline{B})$

$\cancel{A\overline{B}+\overline{B}\overline{B}}$

$\cancel{A\cdot\overline{B}+\overline{B}}$

$\overline{B}\cdot A\cdot\overline{B}$

$\overline{B}\cdot A$

$\overline{\overline{B}+\overline{A}}$

$(A\cdot B+\overline{C})\cdot(\overline{A\cdot\overline{B}}+C)\cdot(A\cdot\overline{C})$

$(A\cdot B+\overline{C})\cdot(\overline{A}+B+C)\cdot(A\cdot\overline{C})$

$\cancel{AB}$ $\quad$ $\cancel{A\cdot B\overline{A}}+A\cdot B\cdot B+A\cdot B\cdot C+\overline{C}A+\overline{C}B+\cancel{\overline{C}C}$

$(A\cdot B+A\cdot B\cdot C+\overline{C}A+\overline{C}B)\cdot(A\cdot\overline{C})$

$(A\cdot B+A\cdot B\cdot C+\overline{C}(A+B))\cdot(\overline{A}\cdot C)$

$(AB(1+C)+\overline{C}(A+B))\cdot(\overline{A}\cdot\overline{C})$

$(AB+\overline{C}(A+B))\cdot(A\cdot\overline{C})$

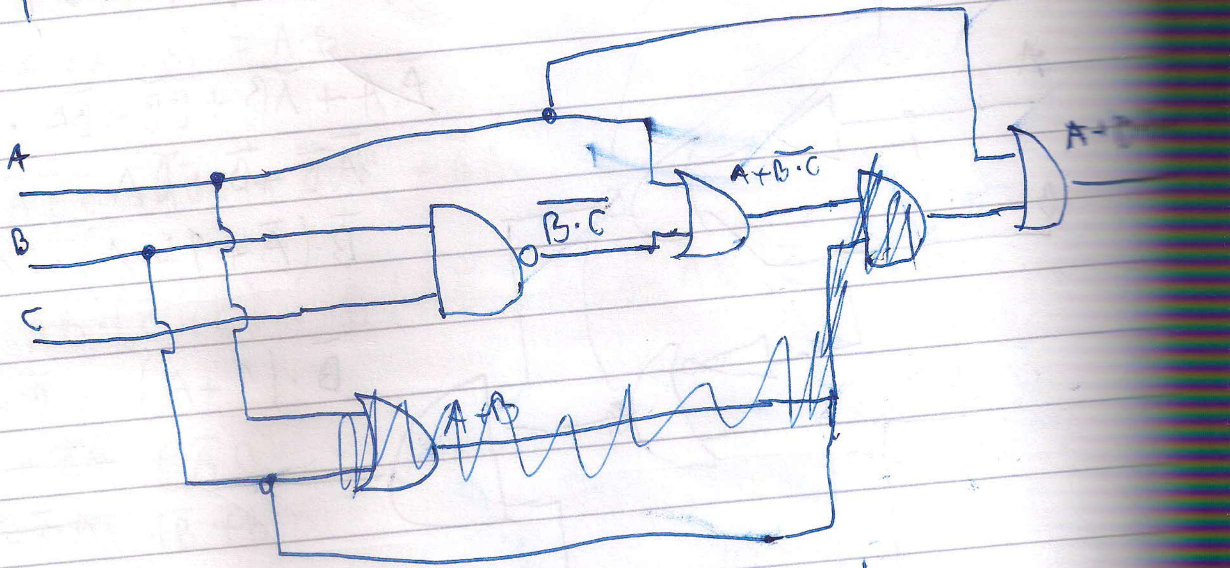
$(AB+\overline{C}A+\overline{C}B)\cdot(A\cdot\overline{C})$

$\cancel{A\overline{C}}$ $\quad$ $ABA\overline{C}+\overline{C}AA\overline{C}+\overline{C}BA\overline{C}$

$AB\overline{C}+A\overline{C}+AB\overline{C}$ $\quad$ $AB\overline{C}+A\overline{C}$

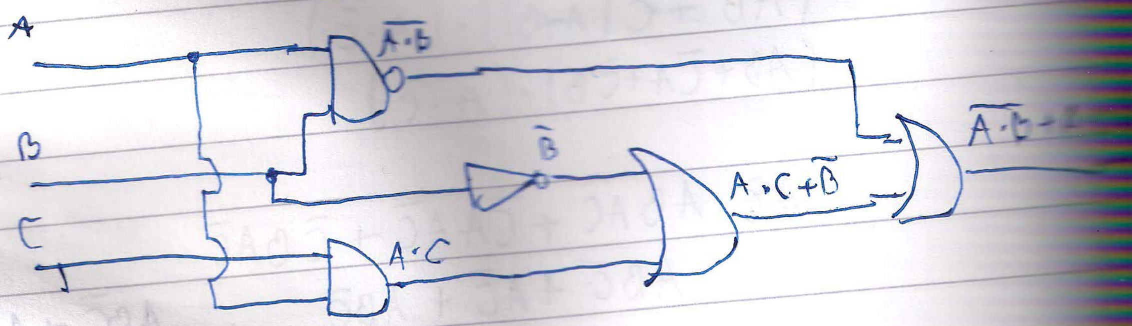
$\overline{C}(AB+A)$

a) $Y = A + B \cdot (A + \overline{B \cdot C})$



A	B	C	$\overline{B \cdot C}$	$A + \overline{B \cdot C}$	$B \cdot (A + \overline{B \cdot C})$	$A + B \cdot (A + \overline{B \cdot C})$
0	0	1	1	1	0	0
0	1	0	1	1	1	1
1	0	0	1	1	0	1
0	1	1	0	0	0	0
1	1	0	1	1	1	1
1	0	1	1	1	0	1
1	1	1	0	1	1	1
0	0	0	1	1	0	0

b) $Y = \overline{A \cdot B} + A \cdot C + \overline{B}$



$\overline{5}A + ABC$

$(A + 0A)\overline{5}$

A	B	C	$\overline{B}$	$\overline{A\cdot B}$	$A\cdot C$	$A\cdot C+\overline{B}$	$\overline{A\cdot B}+AC+\overline{B}$
0	0	0	1	1	0	1	1
0	0	1	1	1	0	1	1
0	1	0	0	1	0	0	1
0	1	1	0	1	0	0	1
1	0	0	1	1	0	1	1
1	0	1	1	1	1	1	1
1	1	0	0	0	0	0	0
1	1	1	0	0	1	1	1

$$A\cdot(\overline{A}+A\cdot B) = A\cdot B$$

$$A\cdot B$$

$$Y = \overline{A+\overline{B}}\cdot(A\overline{B}+C)\cdot(B+\overline{C})$$

$$Y = \overline{A}\cdot B\cdot(A+\overline{B}+C)\cdot(B+\overline{C})$$

$$AB+A\overline{C}+\cancel{\overline{B}B}+\overline{B}C+CB+\cancel{C\overline{C}}$$

$$AB+A\overline{C}+\overline{B}C+CB\cdot\overline{A}\cdot B$$

$$AB+A\overline{C}+C\cdot(\overline{B}+B)\cdot\overline{A}\cdot B$$

$$AB+A\overline{C}+C\cdot\overline{A}\cdot B$$

$$\overline{A}\cdot B\cdot A\cdot(B+\overline{C}+C)$$

$$\overline{A}\cdot B\cdot A$$